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THYSANOPROBOLUS, A NEW ACRITARCH GENUS FROM THE EARLY DEVONIAN (LATE GEDINNIAN) HARAGAN FORMATION OF OKLAHOMA, U.S.A.

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Acritarchs, organic-walled cysts of unknown organisms, probably planktonic algae, are thus far poorly known from North America. This important group nevertheless is abundantly represented in Paleozoic and Late Precambrian sediments. The distinctive *Thysanoprobolus polykion*, new genus, new species, is common in acid insoluble residues of the Early Devonian (Late Gedinnian) Haragan Formation of the Arbuckle Mountain area of Oklahoma. It should be an excellent stratigraphic marker for that horizon.

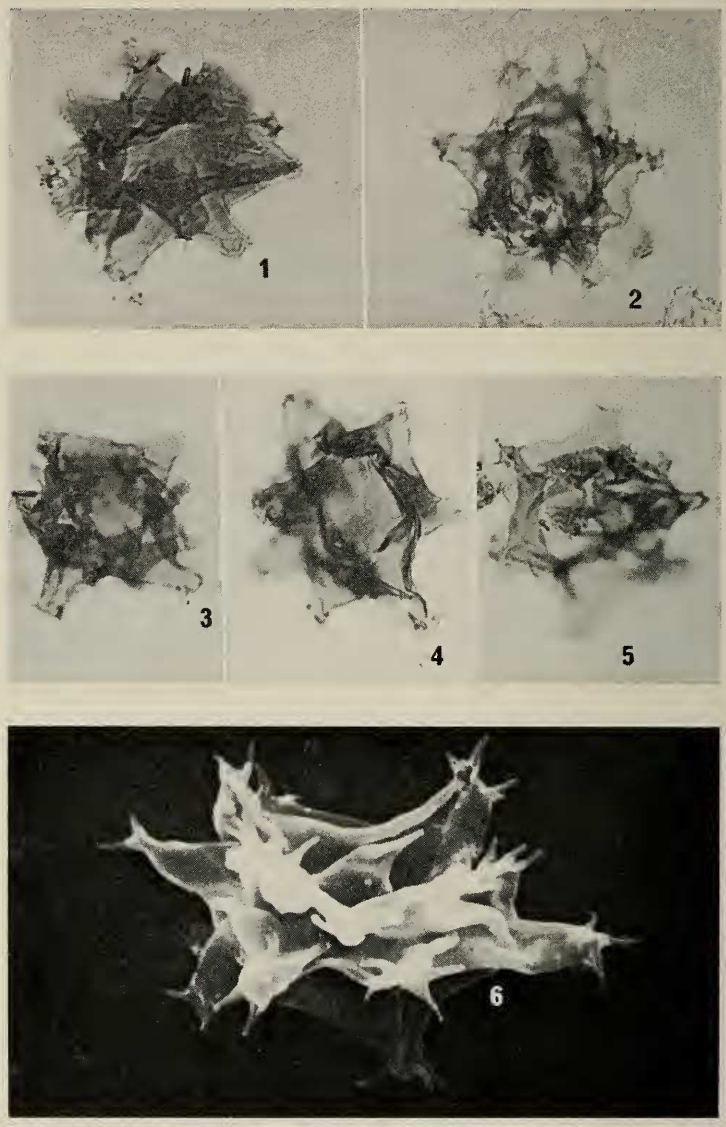
Thysanoprobolus new genus

Acritarch of small size with subangular to subcircular central body; variable number of short, thick, conical to cylindrical processes, distally blunt or truncated, that communicate with central body; processes with crown of hairlike, flexible spines near distal end; wall thin, psilate, no differentiation of wall character between central body and processes. No pylome observed.

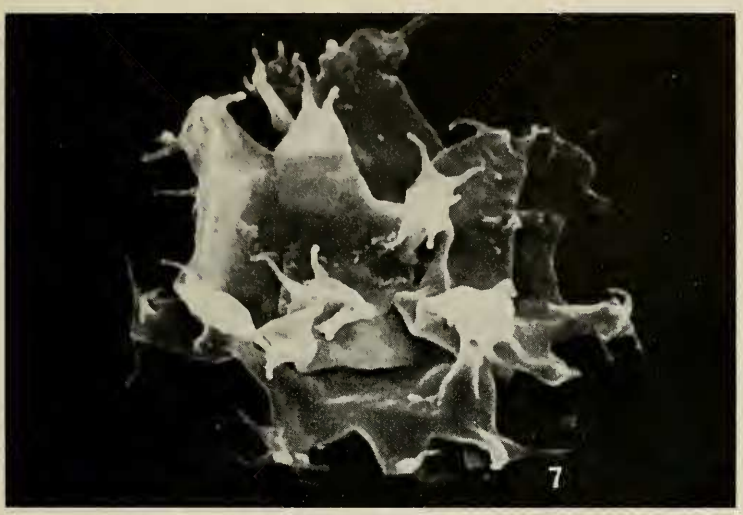
Remarks: *Thysanoprobolus* new genus, resembles *Micrhystridium* Deflandre, in showing no differentiation of the wall between the central body and the processes. The present genus differs in possessing the characteristic and numerous broad-based, conical to cylindrical terminally-tufted processes.

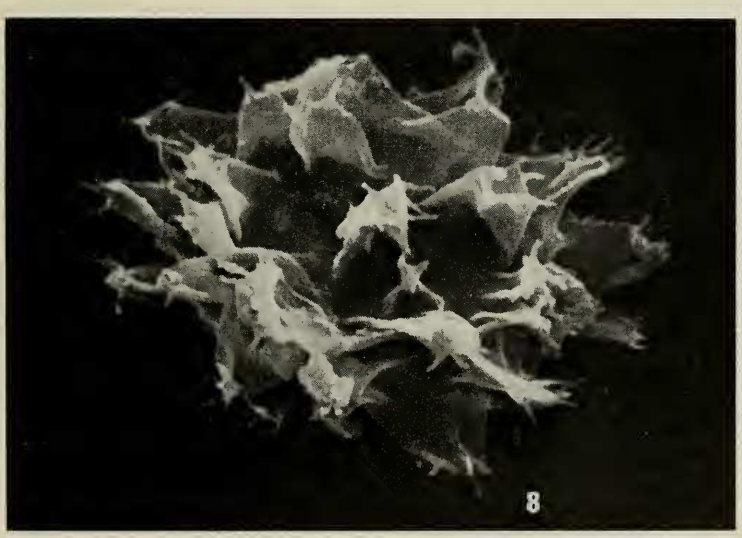
Derivation of name: *Thysanoprobolus*, from Greek, *thysanos*, fringe, tassel + *probolus*, projection, jutting object or prominence. Gender, masculine.

Type species: *Thysanoprobolus polykion* new species.

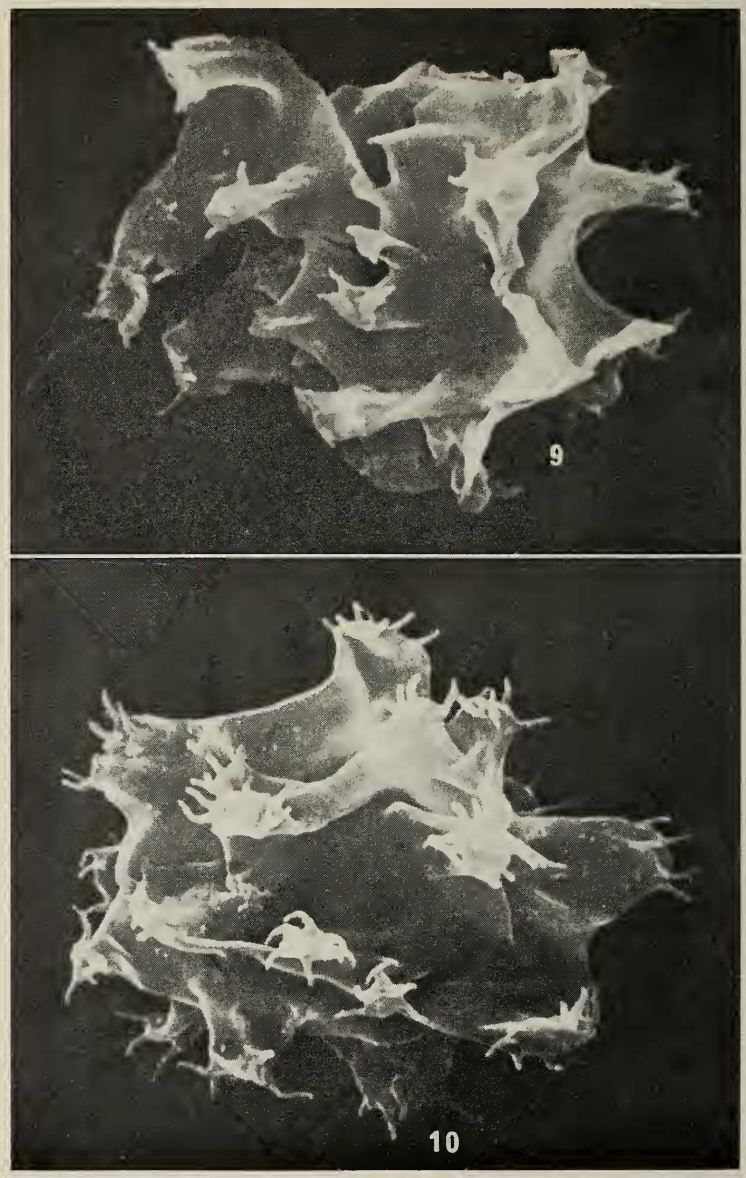


Figs. 1–6. *Thysanoprobolus polykion* n. sp. 1–5, light microscope photographs of paratypes showing characteristic overall shape and conical processes that may be truncated distally and are crowned by a tuft of small flexible spines, × 960. 6, scanning electron micrograph of paratype showing psilate wall of central body and conical processes, × 2000.





FIGS. 7, 8. *Thysanoprobolus polykion* n. sp. Scanning electron micrographs of paratypes showing variable shape of processes which are commonly distally truncated and have a crown of spines just below the summit, × 2000.



Figs. 9, 10. *Thysanoprobolus polykion* n. sp. 9, paratype, showing psilate wall and variable width and length of processes. 10, holotype, showing broad based low processes, commonly truncated at the distal end due to collapse; the process at the right shows the uncollapsed character with a tuft of small spines just below the summit (See Figure 11). Both scanning electron micrographs, × 2000.

FIGS. 11, 12. *Thysanoprobolus polykion* n. sp. 11, holotype, enlargement of large process center right margin of figure 10, showing form of uncollapsed process and 5 prominent spines and a tip of the sixth one in the lower center of the process which arise a short distance below the summit. 12, enlargement of lower right process of figure 10, showing 8 spines just below summit. Both scanning electron micrographs, × 10,000.

Thysanoprobolus polykion new species

Figs. 1–12

Central body subangular to subcircular, extremely variable shape resulting from distortion during burial and compression of the sediments; 14–25 broad and low processes visible from one side, of extremely variable width near their proximal end, processes truncated distally, ranging from a broad-based conical to cylindrical shape; process interior freely communicates with the central body, distal ends of processes rounded, or more commonly wrinkled and truncated, probably due to collapse, 3–8 short secondary spines, commonly 5 or 6, with a maximum length of about 4 μ, arise a short distance below the distal end of the process, proximal part of these small secondary spines opens into the processes but distally they gradually become solid, flexible and hairlike; wall thin, transparent, less than 0.5 μ in thickness, psilate, wall of processes not differentiated from that of central body. No pylome observed.

Diameter of central body ranges from 19 μ–25 μ, and overall diameter from 32 μ–42 μ.

Remarks: This distinctive species is superficially similar to *Baltisphaeridium guapum* F. H. Cramer, but differs in the process character. Processes of *B. guapum* terminate in a sharp point, and have 4–6 sharp tipped secondary appendages at their mid-point, whereas in the present species the processes are truncated or broadly rounded and crowned with a tuft of hairlike spines just below the tip.

Derivation of specific name: From the Greek, *polys,* many + *kion,* column, pillar.

Types and occurrence: Holotype 69–193–SEM 730–732 (Figs. 10–12) and figured paratypes 67–169–SEM 776 (Fig. 6), 777 (Fig. 7), 779 (Fig. 8), 780 (Fig. 9), 67–169 (1) 30.1–93 (Fig. 1), 67–169 (1) 35.1–92.3 (Fig. 2), 67–193 (1) 38.5–108.9 (Fig. 3), 67–193 (1) 46.4–99.3 (Fig. 4), and 67–193 (1) 43.7–92.8 (Fig. 5), all from the Early Devonian (Late Gedinnian) Haragan Formation, calcareous shale intercalated between limestone beds in the lower part of the formation, exposed in an escarpment in the NW 1/4, Sec. 8, T. 1 S., R. 8 E., west of Clarita, Coal County, Oklahoma. All specimens are in the Helen Tappan Loeblich collection at the University of California, Los Angeles. Collected by H. T. and A. R. Loeblich, Jr., 3 September 1967.

Acknowledgment: The writers are indebted to our associate, R. B. MacAdam, for picking the specimens and for taking the photographs with the JEOLCO JSM-1 Scanning electron microscope.